

WHAT IS CLAIMED IS

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1. An apparatus for forming an image, in which hardware resources for use in the forming of images are provided, and one or more processes run based on programs in respect of the forming of
10 images, said apparatus comprising:

an off-line unit which puts said one or more processes in a off-line state in which restriction is placed on the running of said one or more processes;

15 a memory area releasing unit which releases one or more memory areas used by said one or more processes that are put in the off-line state; and

a data laying-out unit which lays out data
20 in said one or more memory areas released by said memory area releasing unit.

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2. The apparatus as claimed in claim 1,
wherein said data laying-out unit prompts said off-
line unit to put said one or more processes in the
off-line state as preparation for laying out the
5 data in said one or more memory areas.

10 3. The apparatus as claimed in claim 2,
wherein said data laying-out unit prompts said
memory area releasing unit to release said one or
more memory areas used by said one or more processes
that are put in the off-line state, after said off-
15 line unit puts said one or more processes in the
off-line state.

20 4. The apparatus as claimed in claim 1,
wherein said off-line unit sends an off-line-shift
request to said one or more processes for putting
said one or more processes to the off-line state.

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5. The apparatus as claimed in claim 4,
5 wherein said off-line unit notifies said data
laying-out unit whether said one or more processes
are in the off-line state, upon receiving a response
from said one or more processes responding to the
off-line-shift request.

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6. The apparatus as claimed in claim 5,
15 wherein said off-line unit notifies said data
laying-out unit that said one or more processes are
in the off-line state, after all said one or more
processes having received the off-line-shift request
shift to the off-line state.

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7. The apparatus as claimed in claim 5,
25 wherein said off-line unit notifies said data

laying-out unit that said one or more processes did
not shift to the off-line state, after a notice
indicating inability to shift to the off-line state
is received from said one or more processes having
5 received the off-line-shift request.

10 8. The apparatus as claimed in claim 5,
wherein said off-line unit notifies said data
laying-out unit that said one or more processes did
not shift to the off-line state, after waiting for a
response from all of said processes having received
15 the off-line-shift request, even when a notice
indicating inability to shift to the off-line state
is received from one or more of said processes
having received the off-line-shift request.

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 9. The apparatus as claimed in claim 5,
wherein said off-line unit notifies said data
25 laying-out unit that said one or more processes did

not shift to the off-line state, after a notice
indicating inability to shift to the off-line state
is received from one of said one or more processes
having received the off-line-shift request, without
5 waiting for a response from others of said one or
more processes having received the off-line-shift
request.

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10. The apparatus as claimed in claim 4,
wherein said off-line unit measures a time lapse
from the sending of the off-line-shift request to
15 said one or more processes, and notifies said data
laying-out unit that said one or more processes are
in the off-line state after a predetermined length
of the time lapse even if no response to the off-
line-shift request is received from said one or more
20 processes.

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11. The apparatus as claimed in claim 1,

wherein said one or more processes are allowed to
run without said restriction after said off-line
unit cancels the off-line state.

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12. The apparatus as claimed in claim 1,
wherein said restriction involves preventing an
10 action by said one or more processes responding to a
request from another process.

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13. The apparatus as claimed in claim 12,
wherein said one or more processes having shifted to
the off-line state registers the request from
another process.

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14. The apparatus as claimed in claim 1,
25 further comprising a process terminating unit which

terminates said one or more processes having shifted
to the off-line state.

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15. The apparatus as claimed in claim 14,
wherein said process terminating unit terminates
said one or more processes in a predetermined order.

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16. The apparatus as claimed in claim 15,
15 wherein said order is defined according to priority
assigned to each of said one or more processes.

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17. The apparatus as claimed in claim 15,
wherein said order is defined according to size of
memory areas allocated to the one or more respective
processes.

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18. The apparatus as claimed in claim 15,
5 wherein said order is defined according to position
of memory areas allocated to the one or more
respective processes.

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19. The apparatus as claimed in claim 14,
wherein said memory area releasing unit releases
memory areas that are no longer used after said
15 process terminating unit terminates said one or more
processes.

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20. The apparatus as claimed in claim 19,
wherein said memory area releasing unit releases the
memory areas according to size of said data that is
to be laid out.

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21. The apparatus as claimed in claim 1,
5 wherein said memory area releasing unit notifies
said data laying-out unit of completion of releasing
of the one or more memory areas after releasing the
one or more memory areas.

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22. The apparatus as claimed in claim 1,
wherein the data laid out by said data laying-out
15 unit is an updating program for updating at least
one of the programs, and said data laying-out unit
obtains the updating program through data
communication.

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23. The apparatus as claimed in claim 22,
further comprising a program updating unit which
25 updates at least one of the programs in response to

a program updating start request sent from said data laying-out unit.

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24. The apparatus as claimed in claim 23, further comprising an input unit which is used to operate said apparatus, and said program updating unit invalidates said input unit when updating at least one of the programs.

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25. The apparatus as claimed in claim 23, wherein said program updating unit reboots said apparatus after completing the updating of at least one of the programs.

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26. The apparatus as claimed in claim 23, wherein said program updating unit notifies a device

of status of the program updating, said device
communicating with said apparatus.

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27. The apparatus as claimed in claim 26,
wherein said program updating unit notifies of the
status of the program updating by use of a process
10 that has shifted to the off-lien state.

15 28. The apparatus as claimed in claim 1,
wherein said one or more memory areas are outside
control of an operating system that controls the
running of said one or more programs and the
hardware resources.

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29. A method of acquiring one or more
25 memory areas in an image forming apparatus, in which

hardware resources for use in the forming of images are provided, and one or more processes run based on programs in respect of the forming of images, the running of the programs and the hardware resources
5 being controlled by an operating system, said method comprising:

an off-line step of putting said one or more processes in a off-line state in which restriction is placed on the running of said one or
10 more processes;

a memory area releasing step of releasing one or more memory areas used by said one or more processes that are put in the off-line state; and

a data laying-out step of laying out data
15 in said one or more memory areas released by said memory area releasing step.

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30. The method as claimed in claim 29, further comprising a process terminating step of terminating said one or more processes having shifted to the off-line state.

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31. The method as claimed in claim 29,
5 wherein the data laid out by said data laying-out
step is an updating program for updating at least
one of the programs.